

Vedeliku vooluhulga mõõtmine kaetud veejuhtmetes. Kaalumismeetod

Measurement of liquid flow in closed conduits -
Weighing method

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 24185:1999 sisaldab Euroopa standardi EN 24185:1993 + AC:1993 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 12.12.1999 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 24185:1999 consists of the English text of the European standard EN 24185:1993 + AC:1993.</p> <p>This document is endorsed on 12.12.1999 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala:</p> <p>Käesolev standard määrab kindlaks meetodi vedeliku voolamiskiiruse mõõtmiseks kaetud veejuhtmetes, kusjuures mõõdetakse teatud kindla ajavahemiku jooksul kaalumispaki suunatud vedeliku mass. Standard käsitleb peamiselt mõõteriistu, töö käiku, voolamiskiiruse arvutamise metoodikat ja mõõtmisega seonduvaid ebatäpsusi.</p>	<p>Scope:</p>
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ICS 17.120.10

Võtmesõnad: kaalu määramine, kalibreerimine, kulumõõturid, mõõteriistad, torustikku läbiv vooluhulk, vea analüüs, vedeliku voolamine, vooluhulga mõõtmine

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Descriptors: Flow measurement, liquid flow, pipe flow, measuring instruments, flowmeters, calibration, weight measurement, error analysis.

English version

Measurement of liquid flow in closed conduits

Weighing method
(ISO 4185 : 1980)

Mesure de débit des liquides dans des
conduites fermées; méthode par pesée
(ISO 4185 : 1980)

Durchflußmessung von Flüssigkeiten in
geschlossenen Leitungen; Wägevverfahren
(ISO 4185 : 1980)

This European Standard was approved by CEN on 1993-06-18 and is identical to the ISO Standard referred to.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

In 1991, CEN/BT decided to submit International Standard
ISO 4185 : 1980 Measurement of liquid flow in closed conduits; weighing method
to the CEN/PQ procedure.

Following the positive result of the PQ, CEN/BT agreed to submit ISO 4185 : 1980, without modifications, to Formal Vote.
The result was positive.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, and conflicting national standards withdrawn, by December 1993 at the latest.

In accordance with the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard:

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

Endorsement notice

The text of the International Standard ISO 4185 : 1980 was approved by CEN as a European Standard without any modification.

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1 General

1.1 Scope and field of application

This International Standard specifies a method of liquid flow-rate measurement in closed conduits by measuring the mass of liquid delivered into a weighing tank in a known time interval. It deals in particular with the measuring apparatus, the procedure, the method for calculating the flow-rate and the uncertainties associated with the measurement.

The method described may be applied to any liquid provided that its vapour pressure is such that any escape of liquid from the weighing tank by vaporization is not sufficient to affect the required measurement accuracy. Closed weighing tanks and their application to the flow measurement of liquids of high vapour pressure are not considered in this International Standard.

This International Standard does not cover the cases of corrosive or toxic liquids.

Theoretically, there is no limit to the application of this method which is used generally in fixed laboratory installations only. However, for economic reasons, usual hydraulic laboratories using this method can produce flow-rates of 1.5 m³/s or less.

Owing to its high potential accuracy, this method is often used as a primary method for calibration of other methods or devices for mass flow-rate measurement or volume flow-rate measurement provided that the density of the liquid is known accurately. It must be ensured that the pipeline is running full with no air or vapour pockets present in the measuring section.

1.2 References

ISO 4006, *Measurement of fluid flow in closed conduits — Vocabulary and symbols.*

ISO 5168, *Measurement of fluid flow — Estimation of uncertainty of a flow-rate measurement.*

OIML, Recommendations Nos. 1, 2, 3, 20, 28, 33.

1.3 Definitions

Only terms which are used in a special sense or the meaning of which merits restatement are defined below.

1.3.1 static weighing : The method in which the net mass of liquid collected is deduced from tare and gross weighings made respectively before and after the liquid has been diverted for a measured time interval into the weighing tank.

1.3.2 dynamic weighing : The method in which the net mass of liquid collected is deduced from weighings made while fluid flow is being delivered into the weighing tank. (A diverter is not required with this method.)

1.3.3 diverter : A device which diverts the flow either to the weighing tank or to its by-pass without changing the flow-rate during the measurement interval.

1.3.4 flow stabilizer : A structure forming part of the measuring system, ensuring a stable flow-rate in the conduit being supplied with liquid; for example, a constant level head tank, the level of liquid in which is controlled by a weir of sufficient length.

1.3.5 buoyancy correction : The correction to be made to the readings of a weighing machine to take account of the difference between the upward thrust exerted by the atmosphere, on the liquid being weighed and on the reference weights used during the calibration of the weighing machine.

1.4 Units

The units used in this International Standard are the SI units, metre, kilogram, and second; the degree Celsius is used for convenience instead of the kelvin.